

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION**

ELNORA CARTHAN, et al.,

Plaintiffs,

v.

RICK SNYDER, et al.,

Defendants.

Case No. 5:16-cv-10444-JEK-MKM

Hon. Judith E. Levy  
Magistrate Judge Mona K.  
Majzoub

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**DEFENDANTS VEOLIA NORTH AMERICA, LLC, VEOLIA NORTH AMERICA, INC., AND VEOLIA WATER NORTH AMERICA OPERATING SERVICES, LLC'S MOTION TO EXCLUDE THE TESTIMONY AND DECLARATION OF DR. HOWARD HU**

Pursuant to Federal Rule of Evidence 702, Defendants Veolia North America, LLC, Veolia North America, Inc., and Veolia Water North America Operating Services, LLC (VNA) move to exclude certain opinions and testimony of Dr. Howard Hu.<sup>1</sup> Plaintiffs rely on Dr. Hu's opinion in an effort to demonstrate that members of the minors subclass uniformly suffered injury from exposure to lead in

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<sup>1</sup> VNA submits this motion to exclude expert testimony in conjunction with its opposition to Plaintiffs' motion for class certification. VNA reserves the right to raise additional objections to the testimony of Plaintiffs' experts if the Court grants class certification.

tap water during the Flint water crisis. Because Dr. Hu's opinions are unreliable and not relevant to the claims against VNA, they should be excluded under Rules 702 and 402.

As Local Rule 7.1(a) requires, VNA conferred with Plaintiffs' counsel concerning this motion. After VNA explained the nature and legal basis for the motion, Plaintiffs' counsel said that they would oppose it.

Respectfully submitted,

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Dated: January 7, 2021

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**DEFENDANTS VEOLIA NORTH AMERICA, LLC, VEOLIA NORTH  
AMERICA, INC., AND VEOLIA WATER NORTH AMERICA  
OPERATING SERVICES, LLC'S BRIEF IN SUPPORT OF THEIR  
MOTION TO EXCLUDE THE TESTIMONY AND DECLARATION OF  
DR. HOWARD HU**

## **STATEMENT OF THE ISSUE PRESENTED**

1. Should the Court exclude the identified portions of the declaration and related testimony of Dr. Howard Hu, because his opinions are unreliable and do not fit Plaintiffs' theory of liability against VNA, and therefore are inadmissible under Rules 702 and 402?

**VNA's answer:** "Yes."

**Plaintiffs' answer:** "No."

## CONTROLLING OR MOST APPROPRIATE AUTHORITIES

*Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993)

*Lowery v. Enbridge Energy Ltd. P'Ship*, 500 Mich. 1034 (2017)

*Nelson v. Tenn. Gas Pipeline Co.*, 243 F.3d 244 (6th Cir. 2001)

*Pluck v. BP Oil Pipeline Co.*, 640 F.3d 671 (6th Cir. 2011)

*Powell-Murphy v. Revitalizing Auto Comtys. Env't Response*,  
No. 348690, 2020 WL 4722070 (Mich. Ct. App. Aug. 13, 2020)

Fed. R. Evid. 702

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## INTRODUCTION

Dr. Howard Hu is a medical doctor and epidemiologist. Plaintiffs rely on his opinions for two purposes: (1) to come up with criteria for including Flint children in the minors subclass, and (2) to opine that all children in the minors subclass were injured as result of exposure to lead in tap water during the water crisis.

Dr. Hu's opinions were manufactured for this litigation and are not reliable. He admitted that he adopted "practical," rather than scientific, criteria to construct the class definition and to define the relevant injury. Further, his opinions on causation and injury suffer from serious methodological flaws and ignore the real-world data.

First, Dr. Hu says that there is "no safe level" of lead exposure and that any increase in blood lead levels causes some impairment of neurobehavioral development. That opinion is unreliable because it ignores the central tenet of toxicology—that the toxicity of a substance depends on the degree of exposure. To give a reliable opinion that a toxic substance like lead has harmed a plaintiff, an expert must show that the plaintiff was exposed to a sufficient dosage of the substance to cause the plaintiff's particular injury. Because Dr. Hu instead relies on his unsupported theory that every exposure to lead causes injury, his opinion fails that basic test.

Second, Dr. Hu lacks reliable grounds for assuming that every subclass member was exposed to enough lead to cause his or her blood lead levels to rise to the threshold necessary to cause injury. Dr. Hu ignores studies showing that many homes in Flint had no detectable level of lead in their tap water during the water crisis and that many children's blood lead levels did not increase.

Third, Dr. Hu relies on a vague definition of harm that cannot meet Michigan's "present physical injury" requirement. Neither mere "exposure" to a toxic substance nor the risk of future physical injury is sufficient to satisfy this requirement. Dr. Hu asserts that all class members suffered a "non-trivial impairment of neurobehavioral development" as a result of their increased exposure to lead, but he offers no standards for measuring that injury or confirming that it actually caused any injury.

Finally, Dr. Hu's opinions do not fit Plaintiffs' theory of liability against VNA, because Dr. Hu does not link his alleged harms to VNA's conduct. VNA did not begin its engagement in Flint until February 2015, after government officials made the switch to Flint River water and after water lead levels returned to pre-switch levels. Dr. Hu does not assert that any (much less all) members of the putative subclass suffered incremental injury after VNA began its engagement in Flint.

Dr. Hu's opinions therefore are unreliable and not relevant to support a class action against VNA and should be excluded under Rules 702 and 402.

## BACKGROUND

Dr. Hu sets out to identify a “subclass of injured children” who “confronted increased lead exposure as a result of the Flint water crisis” and who more likely than not suffered “adverse impacts on health as a direct result of their exposure to Flint water.” Hu Decl. ¶ 9, ECF No. 1208-90, PageID.35882-35884 (Decl.). Plaintiffs employ Dr. Hu’s criteria to define the minors subclass. *See* Pls.’ Mem. in Supp. of Mot. for Class Certification xii, ECF No. 1207, PageID.34436 (Class Cert. Mot.).

Dr. Hu opines that everyone in the subclass was injured as a result of exposure to increased lead in Flint tap water after the change in water source in April 2014. Decl. ¶ 9(3), PageID.35583. To reach that result, he makes broad assumptions about subclass members’ exposures to lead, assumes that any incremental exposure causes harm, and assumes that even minimal exposure results in injury.

First, Dr. Hu assumes that tap water in a number of buildings in Flint had elevated lead levels from May 1, 2014 to January 1, 2016 (defined by Dr. Hu as the exposure period) as a result of the switch to Flint River water. Dr. Hu did not come up with that list of buildings himself; instead, he relies on the opinions of Dr. Clifford Weisel and Dr. Pierre Goovaerts. Decl. ¶¶ 20, 21.ii. PageID.35891. The buildings include any home built before 1986; any home with a documented water lead level after May 1, 2014; and any school or daycare with any documented water lead level

when tested on October 2, 2015 or with lead above 1 part per billion (1 ppb) when tested in 2016. *Id.* ¶ 21, PageID.35891-35893. Neither Dr. Hu nor Dr. Weisel or Dr. Goovaerts say how *much* of an increase in lead there was in the tap water at these locations. *See* Ex. 2, Hu Dep. 405:2-407:1 (Dep.). Dr. Hu simply assumes—based on Dr. Weisel’s opinions—that there was some incremental increase in lead in the water in each building.

Second, Dr. Hu tries to extrapolate from those presumed increases in water lead levels that subclass members experienced increased blood lead levels. He assumes that every child who meets the requirements for the minors subclass (*i.e.*, was in utero or between ages 0-10 during the exposure period, lived or attended school or daycare at one of above locations for at least 90 days, and consumed Flint water for at least 14 of the 90 days) experienced some increase in his or her blood lead levels as a result of the April 2014 change in water source.

For this point, Dr. Hu relies on the opinion of Plaintiffs’ expert Dr. Panos Georgopoulos. *See* Dep. 89:23-90:12, 116:12-15; Decl. ¶¶ 9(1), PageID.35883. Dr. Georgopoulos used modeling to show that, under certain assumptions, exposing children to increased lead in tap water can be expected to increase their blood lead levels. Georgopoulos Decl. ¶ 11(a), ECF No. 1208-123, PageID.37956. Neither Dr. Hu nor Dr. Georgopoulos attempted to determine the *amount* of any increase in blood lead levels that these children would have experienced. Rather, Dr.

Georgopoulos states only that the blood lead levels of these children would have increased some “quantifiable” (but not quantified) amount. *Id.* ¶ 11(a), PageID.37956.

Third, Dr. Hu attempts to connect the presumed elevated blood lead levels to injuries. Based on Dr. Georgopoulos’s modeling showing that hypothetical children exposed to lead in the water would experience a quantifiable increase in their blood lead levels, Dr. Hu asserts that all subclass members were injured. In particular, he says that all members of the putative subclass sustained “non-negligible impairment of their neurobehavioral development.” Decl. ¶ 22, PageID.35895. Dr. Hu’s opinion about those injuries does not depend on the particular child having any specific threshold blood lead level—the level need not even be detectable. Dep. 277:6-278:23.

Dr. Hu then purports to determine the impairment caused by the increased blood lead levels. His methodology is to use examples of hypothetical children exposed to hypothetical amounts of lead (which he calls “exemplars of exposure scenarios”) and determine those hypothetical children’s injuries. For each exemplar case, Dr. Hu relies on Dr. Georgopoulos’s model to determine a blood lead level, Decl. ¶ 22(b), PageID.35986, and then calculates an associated loss of IQ points, *id.* ¶ 22(c), PageID.35897. To do that, he estimates a loss of 0.50 IQ points for every 1 microgram per deciliter ( $\mu\text{g}/\text{dL}$ ) in blood lead levels. *Id.*

Dr. Hu’s report is purely hypothetical. He did not examine any class member or try to figure out any class member’s actual exposure or blood lead levels. He just assumes that every subclass member suffered some IQ loss. Dr. Hu makes clear, however, that individualized evidence would be needed to conclude that any subclass member actually developed a clinical disorder, or experienced a worsening of an existing clinical disorder, as a result of exposure to increased lead in tap water during the exposure period. Decl. ¶ 34, PageID.35916-35917; Dep. 399:5-400:6. His concession that there would need to be an individual analysis to determine injury for thousands of plaintiffs precludes class certification.

### **LEGAL STANDARD**

Courts carry out the “basic gatekeeping obligation” of ensuring the “reliability and relevancy of expert testimony.” *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147, 152 (1999). A qualified expert may provide opinion testimony only if it will “help the trier of fact to understand the evidence or to determine a fact in issue.” Fed. R. Evid. 702(a).

To give opinion testimony, an expert must be also qualified through “knowledge, skill, experience, training, or education.” Fed. R. Evid. 702. Moreover, a nexus must exist between the expert’s qualifications and the opinion offered: “The issue with regard to expert testimony is not the qualifications of a witness in the abstract, but whether those qualifications provide a foundation for a witness to

answer a specific question.” *Berry v. City of Detroit*, 25 F.3d 1342, 1351 (6th Cir. 1994).

The expert opinion also must be “based on sufficient facts or data,” must be “the product of reliable principles and methods,” and must be the result of the expert “reliably appl[ying] the principles and methods to the facts of the case.” Fed. R. Evid. 702(b)-(d). In short, expert testimony must “rest[] on a reliable foundation and [be] relevant to the task at hand.” *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 597 (1993).

The Supreme Court has identified four non-exclusive factors for courts to consider when deciding whether an expert’s methodology “rests on a reliable foundation”: (1) “whether a theory or technique can be or has been tested”; (2) “whether it has been subjected to peer review and publication”; (3) “whether a technique has a known or potential rate of error and the existence of standards controlling its operation”; and (4) “whether the theory or technique enjoys general acceptance in a relevant scientific community.” *Nelson v. Tenn. Gas Pipeline Co.*, 243 F.3d 244, 251 n.5 (6th Cir. 2001) (citing *Daubert*, 509 U.S. at 593-94).

As the proponent of the expert testimony, Plaintiffs bear the burden of establishing its admissibility by a preponderance of evidence. *Nelson*, 243 F.3d at 251. Admissibility must be proven at the class-certification stage, and “assurances that [the party] could fix the model at the merits stage” are insufficient. *Cannon v.*

*BP Prods. N. Am., Inc.*, 2013 WL 5514284, at \*5 (S.D. Tex. Sept. 30, 2013) (citing *Comcast Corp. v. Behrend*, 569 U.S. 27, 37-38 (2013)). As explained in VNA’s opposition to the motion for class certification, district courts should rule on *Daubert* challenges to expert testimony at the class-certification stage if the plaintiffs rely on that testimony to meet the Rule 23 requirements. See, e.g., *In re FCA US LLC Monostable Elec. Gearshift Litig.*, 382 F. Supp. 3d 687, 691-92 (E.D. Mich. 2019).

## **ARGUMENT**

### **I. Dr. Hu’s Opinion That Every Member Of The Minors Subclass Suffered An Injury From Exposure To Lead From Flint River Water Is Inadmissible**

Many variables affect whether members of the minors subclass suffered lead-related injuries because of the 2014 change in water source. As Dr. Hu explains in his report, exposure to water lead levels can be expected to vary depending on “the condition and type of service line, connectors, and indoor plumbing at each location”; the effects of “flushing, water flow, local pipes and interior plumbing conditions”; and the “frequency of an individual’s consumption of the tap water.” Decl. ¶ 10, PageID.35884-35886. Moreover, “even if an individual’s level of exposure to tap water is known, . . . the amount of lead that would be absorbed from the gastrointestinal tract into blood that, in turn, would serve as the dose of lead to target organs such as the brain, can be expected to vary based on that individual’s

nutritional status,” as well as “biological factors” such as age and genetics. *Id.*, PageID.35586.

Although Dr. Hu acknowledges the importance of those individualized factors, he did not consider the actual circumstances of any named plaintiff or subclass member in reaching his opinions. He did not examine a single subclass member, review information about any child’s bone lead or blood lead levels, review water lead testing data for any home or school, or determine whether those buildings had lead service lines. Instead, in order to support class certification, Dr. Hu opines that all subclass members were injured based on a hypothetical analysis with two flawed premises.

First, Dr. Hu assumes that any incremental exposure to lead causes harm. That type of “no safe level” opinion is inherently unreliable and legally insufficient. Second, Dr. Hu assumes (based on the opinions of other experts) that every subclass member was exposed to higher water lead levels as a result of the change in water source and experienced a corresponding increase in blood lead levels. But that assumption is unwarranted. Accordingly, Dr. Hu’s testimony is insufficient to establish that each subclass member was harmed from exposure to Flint River water.

**A. Courts Regularly Exclude As Unreliable Expert Testimony That Ignores The Relationship Between Dose And Toxicity**

It is a fundamental tenet of toxicology that “the dose makes the poison.”

Federal Judicial Center, *Reference Manual on Scientific Evidence* 636 (3d ed.

2011)). “[A]ll chemicals have thresholds of exposure that must be exceeded before the harms will occur.” *Bombardiere v. Schlumberger Tech. Corp.*, 934 F. Supp. 2d 843, 849 (N.D. W.Va. 2013); Dep. 319:7-19.

Lead is no exception. As VNA’s expert toxicologist Dr. Brent Finley explains, lead is a naturally occurring substance, and “all persons are exposed to lead on a daily basis, due to the presence of lead in the diet, drinking water, air, soils, and other media,” yet there is “no evidence to indicate that all persons . . . have developed or are developing lead-related illnesses.” Ex. 3, Finley Report 54.

That principle is embodied in Michigan law. Courts in toxic-tort cases in Michigan require plaintiffs to introduce “not simply proof of exposure to the substance, but proof of *enough* exposure to cause the plaintiff’s specific illness.” *Lowery v. Enbridge Energy Ltd. P’Ship*, 500 Mich. 1034, 1043 (2017) (Markman, J., concurring) (quoting *McClain v. Metabolife Int’l, Inc.*, 401 F.3d 1233, 1242 (11th Cir. 2005)) (emphasis added); see *Powell-Murphy v. Revitalizing Auto Communities Envtl. Response Tr.*, No. 348690, 2020 WL 4722070, at \*6 (Mich. Ct. App. Aug. 13, 2020) (adopting the causation framework described in Justice Markman’s *Lowery* concurrence).

It is “well-settled that the mere existence of a toxin in the environment is insufficient to establish causation without proof that the level of exposure could cause the plaintiff’s symptoms.” *Pluck v. BP Oil Pipeline Co.*, 640 F.3d 671, 679

(6th Cir. 2011) (applying Ohio law). Because “a substance may cause different harmful effects in different doses,” “a substance may be harmful at a certain level of exposure but may not be sufficient to cause a particular adverse health effect.” *Lowery*, 500 Mich. at 1044 (Markman, J., concurring). Dosage is “the single most important factor to consider in evaluating whether an alleged exposure caused a specific adverse effect.” David L. Eaton, *Scientific Judgment and Toxic Torts—A Primer in Toxicology for Judges and Lawyers*, 12 J.L & Pol'y 5, 11 (2003-2004) (Eaton) (cited in *Lowery*, 500 Mich. at 1043-44 (Markman, J., concurring)). Given the importance of dosage to the science of toxicology, “an expert who avoids or neglects this principle of toxic torts without justification casts suspicion on the reliability of his methodology.” *McClain*, 401 F.3d at 1242.

The Sixth Circuit has consistently applied this principle. In *Nelson*, a case about exposure to PCBs, the Sixth Circuit recognized that “the reasoning and methodology underlying” the opinion of an expert who “ma[kes] no attempt to determine the dosage the plaintiffs received and simply assume[s] that it was sufficient to make them ill” is inherently “unreliable.” *Nelson*, 243 F.3d at 252 (upholding district court’s exclusion of expert’s testimony). Likewise, in *Pluck*, a case about potential benzene contamination from a pipeline spill, the Sixth Circuit upheld the district court’s exclusion of expert testimony because, among other things, the expert “relied upon a ‘no safe dose’ theory” rather than showing that the

plaintiff had been exposed to a sufficient amount of benzene to cause the claimed injury. 640 F.3d at 675. The court explained that the expert could not establish causation because he did not “ascertain [the plaintiff’s] level of benzene exposure” or “determine whether she was exposed to quantities of benzene exceeding the EPA’s safety regulations.” *Id.* at 679. The court also noted that the “no safe dose” theory has been “discredited by other courts as a basis for establishing specific causation.” *Id.* at 675.

Many courts have found this type of “no safe dose” testimony to be unreliable and excluded it. *See, e.g., McClain*, 401 F.3d at 1242-43 (holding that district court abused its discretion by not excluding the causation opinion of plaintiff’s expert because his opinion that “any amount of [the product] is too much . . . clearly contradicts the principles of reliable methodology”); *Wills v. Amerada Hess Corp.*, 379 F.3d 32, 38, 48-50 (2d Cir. 2004) (affirming exclusion of expert testimony because expert had posited that “there is no safe level of exposure” rather than relying on a tested, accepted, dose-response methodology); *Whiting v. Boston Edison Co.*, 891 F. Supp. 12, 25 (D. Mass. 1995) (holding that expert opinion relying on the theory that any exposure is harmful regardless of dose “fails all of the *Daubert* reliability factors”); *Adams*, 2007 WL 2219212, at \*7 (holding that ‘the ‘no-safe-dose’ theory is not a reliable methodology’); *Henricksen v. ConocoPhillips Co.*, 605 F. Supp. 2d 1142, 1165-66 (E.D. Wash. 2009) (“The use of the no safe level or linear

“no threshold” model for showing unreasonable risk ‘flies in the face of the toxicological law of dose-response, that is, that the dose makes the poison.””).

**B. Dr. Hu’s Opinion That Any Exposure Is Sufficient To Cause Injury Is Unreliable**

Dr. Hu advances the theory that *any* lead exposure can and will cause injury. Specifically, Dr. Hu repeatedly opines that “(a) there is no known threshold of lead exposure below which such exposure is known to be safe, and (b) the greater the exposure to lead, the greater the adverse effects on health can be expected.” Decl. ¶¶ 9(2), 13, 23, PageID.35883, 35888-35889, 35901-35903.

An expert’s assertion that a substance is harmful without reference to its threshold dosage “casts suspicion on the reliability of his methodology.” *McClain*, 401 F.3d at 1242. Dr. Hu’s opinion is no different. He does not demonstrate that his theory has “been tested,” that it has “been subjected to peer review and publication,” or that it “enjoys general acceptance in a relevant scientific community.” *Nelson*, 243 F.3d at 251 n.5. To the contrary, Dr. Hu’s theory has been rejected by courts across the country.

In his declaration, Dr. Hu cites two categories of research to support his opinion: (1) regulatory guidelines prepared by the Centers for Disease Control (CDC), the National Toxicology Program, and the European Food Safety Authority, and (2) “specific analyses, meta-analyses, and reviews of epidemiological studies.”

Decl. ¶ 23, PageID.35901-35903. None of that information supports Dr. Hu’s “no safe level” theory.

### **1. Dr. Hu’s Reliance On Agency Or Regulatory Guidelines Is Misplaced**

As support for his “no safe level” theory, Dr. Hu relies on various regulatory guidelines, such as the CDC’s 2012 statement that “public health [] policies should encourage prevention of all exposures to lead” because “no measurable level of blood lead is known to be without deleterious effects.” Decl. ¶ 23, PageID.35902. The fact that science has yet to identify a safe level of lead, however, does not mean that one does not exist. Nor does it mean that any level of exposure can cause harm.

*See* Ex. 15, Weed Report 59-61. Courts have noted that important distinction in excluding similar testimony. *See Comardelle v. Pa. Gen. Ins. Co.*, 76 F. Supp. 3d 628, 634 (E.D. La. 2015) (“Although there may be no known safe level of asbestos exposure, this does not support [the expert witness’s] leap to the conclusion that therefore every exposure . . . must have been a substantial contributing cause of [plaintiff’s] mesothelioma.”); *Anderson v. Ford Motor Co.*, 950 F. Supp. 2d 1217, 1223 (D. Utah 2013) (excluding expert testimony on causation after noting that “Plaintiff’s experts are unable to point to any studies showing that ‘any exposure’ to asbestos above the background level of asbestos in the ambient air is causal of mesothelioma,” but instead “base their opinion on the fact that scientists have been unable to determine a safe level for exposure to asbestos”). That science has yet to

conclude that any level of exposure can cause the specific harms attributed to the minors subclass means that the Court should not accept that theory here: “Law lags science; it does not lead it.” *Tamraz v. Lincoln Elec. Co.*, 620 F.3d 665, 677 (6th Cir. 2010) (quoting *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 319 (7th Cir. 1996)).

Second, Dr. Hu’s reliance on the CDC’s and other agencies’ guidelines is misplaced because regulatory “risk assessments” are not appropriate standards for determining legal causation. As multiple courts have recognized, regulatory standards specifying “safe” levels of exposure to toxins serve a “protection function” intended to identify “a level below which there is *no* appreciable risk to the general population.” *Rhodes v. E.I du Pont de Nemours & Co.*, 253 F.R.D. 365, 377-78 (S.D. W. Va. 2008) (emphasis added). Whether a particular exposure threshold is safe from a regulatory perspective involves a “threshold of proof that is reasonably lower than that appropriate in tort law.” *Allen v. Pa. Eng’g Corp.*, 102 F.3d 194, 198 (5th Cir. 1996).

Put another way, regulatory levels tend to “overestimate potential toxicity levels for nearly all individuals.” Eaton, 12 J.L & Pol’y at 34-35 (“Because a number of protective, often ‘worst-case’ assumptions . . . are made in estimating allowable exposures for large populations, these criteria and the resulting regulatory levels generally overestimate potential toxicity levels for nearly all individuals.”). For that reason, courts do not adopt regulatory standards to establish the threshold at which

a toxin can cause legal harm, much less permit plaintiffs to prove causation simply by showing exposure in excess of those standards.<sup>2</sup>

## **2. The Other Sources Cited In Dr. Hu's Declaration Do Not Support His Opinion**

Dr. Hu also cites various “analyses, meta-analyses, and reviews of epidemiological studies” in his declaration. Decl. ¶ 23, PageID.35901-35902. But none of them supports his opinion that exposure to any amount of lead is harmful.

The CDC defines blood lead levels of 5 µg/dL as “elevated.” Dr. Hu’s opinion addresses much lower blood lead levels. He states that children with blood lead levels “going down to a level of 1 µg/dL” could suffer from “decrements in IQ.” Decl. ¶ 23, PageID.35902. But the studies on which he relies do not say that. To the extent that the studies included some children with blood lead levels of 1 µg/dL, none of them found an association between IQ loss and lead exposures at levels near 1 µg/dL. *See* Dep. 132:16-21, 279:4-281:20. At most, the studies show that lower IQ scores are associated with blood lead levels of 5 µg/dL and above. *Id.* Dr. Hu ultimately admitted at his deposition that there is insufficient scientific support for

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<sup>2</sup> See, e.g., *Sutera v. Perrier Grp. of Am. Inc.*, 986 F. Supp. 655, 664 (D. Mass. 1997) (rejecting regulatory standards as proof of causation because the purpose of regulatory standards is to “reduce public exposure to harmful substances” regardless of whether the level of exposure presents a likely—or even a reasonable—risk of harm); *O’Neal v. Dept. of the Army*, 852 F. Supp. 327, 333 (M.D. Pa. 1994) (EPA risk assessments are “appropriate for regulatory purposes in which the goal is to be particularly cautious [but] overstate the *actual* risk and so, are inappropriate for use in determining whether medical monitoring should be instituted”).

finding that blood lead levels of 1 µg/dL are associated with any measurable harm.

*Id.* at 140:19-141:2 (“Q. Let’s suppose an increase in blood lead level from 0 to 1.

Would that cause harm, in your opinion? A. We don’t know.”).

The vast majority of minors in Flint had blood lead levels far below 5 µg/dL during the exposure period. Ex. 3, Finley Report 35-36, 51. In fact, [REDACTED]

[REDACTED]. Ex. 4, Class Representative Interrogatories and Medical Records; *see also*

Ex. 15, Weed Report 55 (summarizing class representative blood lead test results).

Researchers have estimated that the mean blood lead level among children in Flint

was 1.19 µg/dL in 2014, 1.30 µg/dL in 2015, and 1.32 µg/dL during the 18-month

period when Flint used Flint River water (April 25, 2014, to October 15, 2015). *See*

Ex. 5, Hernan F. Gomez, et al., *Blood Lead Levels of Children in Flint, Michigan: 2006-2016*, 197 The Journal of Pediatrics 158, 161 (2018); Ex. 6, Hernan F. Gomez,

et al., *Analysis of Blood Lead Levels of Young Children in Flint, Michigan Before and During the 18-Month Switch to Flint River Water*, 57 Clinical Toxicology 790,

792 (2019).

Those blood lead levels are substantially lower than the blood lead levels of the populations in the studies forming the basis for Dr. Hu’s opinions. For example, in the study on which Dr. Hu primarily relies, the mean peak blood lead level of the 1,333 children in the pooled analysis was over 18 µg/dL—3.6 times higher than the

5 µg/dL level and 13.6 times higher than the 1.32 µg/dL mean in Flint. Ex. 11, Bruce Lanphear et al., *Low-Level Environmental Lead Exposure and Children's Intellectual Function: An International Pooled Analysis*, 113 Env'l. Health Perspectives 894, 898 Tbl.1 (2005) (Lanphear, *Low-Level Lead Exposure*). In that same study, over 95% of the pool had blood lead levels over 5 µg/dL (the level that qualifies as “elevated” under the CDC’s criteria), *id.*, whereas the proportion of children in Flint with blood lead levels over 5 µg/dL was never higher than 5.0% during the exposure period, Decl. ¶ 33.d, PageID.35910.

Few studies have focused on blood lead levels below 5 µg/dL, and those that have do not show an association between such low lead exposure and decreased IQ. As VNA’s expert epidemiologist Stacey Benson explains, two relatively recent studies examined populations with prenatal and concurrent blood lead levels (*i.e.*, blood lead levels measured on the day of cognitive testing) comparable to those seen in Flint. *See* Ex. 7, Benson Report 43-44. Neither study found a statistically significant negative association between IQ and lead exposures below 5 µg/dL. *Id.* at 44 (discussing Taylor (2017) and Desrochers-Couture (2018)).

Moreover, no studies support Dr. Hu’s opinion that any incremental increase in exposure to lead necessarily will cause adverse health effects in members of the minors subclass. Epidemiological studies examine *population-wide* trends in an effort to identify an “association” between a toxin and a disease. Dep. 198:23-

199:15, 317:20-318:17, 329:14-330:5 They do not purport to show that a particular individual will suffer those effects. *See* Michael D. Green, Federal Judicial Center, *Reference Manual on Scientific Evidence* 552 (3d ed. 2011) (“Epidemiology focuses on the question of general causation (*i.e.*, is the agent capable of causing disease?) rather than that of specific causation (*i.e.*, did it cause disease in a particular individual?”). That is an important distinction because it is well known that exposure levels affect different individuals differently because of each person’s unique characteristics. Ex. 15, Weed Report 10-14. Accordingly, “employing the results of group-based studies of risk to make a causal determination for an individual plaintiff [or here, a large group of plaintiffs] is beyond the limits of epidemiology.” Green, *Reference Manual on Scientific Evidence* at 553.

In fact, the studies cited by Dr. Hu actually show that the effects of lead exposure vary and that exposure to lead does not always negatively affect IQ. For example, the data in the paper on which Dr. Hu relies most heavily suggests a positive association between lead exposure and IQ in at least one of the cohorts studied. *See* Ex. 11, Lanphear, *Low-Level Exposure* at 898 Fig.2; Ex. 15, Weed Report 81-84. With respect to other cohorts, the dose-response relationship varied significantly. *Id.* Other epidemiological studies have similarly observed that low-level lead exposure did not adversely affect cognitive function. Ex. 7, Benson Report 44 (discussing Taylor (2017) and Desrochers-Couture (2018)). Far from

supporting Dr. Hu's contention that there is a "monotonic" dose-response relationship between IQ and lead exposure, these data suggest that individual responses to lead exposure are highly variable.

Accordingly, Dr. Hu offers no reliable scientific support for his opinion that every lead exposure causes harm, and that opinion therefore should be excluded as not "based on sufficient facts or data." Fed. R. Evid. 702(b).

**C. Dr. Hu Had No Reliable Basis For His Opinion That All Subclass Members Were Exposed To Enough Incremental Lead To Cause Harm**

Because lead is ubiquitous, virtually everyone has lead in their bloodstream. Ex. 3, Finley Report 54. Flint children had lead in their blood before the water crisis. *Id.* To show injury on a class-wide basis from the water crisis, Dr. Hu must show that all subclass members were exposed to enough additional lead to raise their blood lead levels above a threshold that causes adverse health effects. But Dr. Hu did not determine each subclass member's starting blood lead levels, much less the magnitude of any change in each member's blood lead level. Dep. 277:6-17, 279:19-280:15. He therefore has no reliable basis for concluding that all subclass members had increases sufficient to cause harm.

**1. Dr. Hu Ignored Data About The Blood Lead Levels Of Flint Children During The Water Crisis**

The available data undermine Dr. Hu's opinion that every subclass member was injured by exposure to lead as result of the water crisis. Plaintiffs' expert Dr.

Lanphear states that “[t]he proportion of children in Flint with a blood lead > 5 µg/dL . . . increased from 2.4% to 4.9% when the City’s water system began distributing water from the Flint River.” Lanphear Decl. ¶ 31, ECF No. 1208-108, PageID.36892; *see also* Decl. ¶ 33.d, PageID.35910. In other words, under Plaintiffs’ own evidence, 95% of Flint children continued to have blood lead levels under 5 µg/dL even after the change in water source. Moreover, the proportion of Flint children with elevated blood lead levels was lower than it was in other urban areas in Michigan. In both Detroit and Grand Rapids, for example, over 8.0% of children had elevated blood lead levels in 2014. Ex. 14, 2014 Data Report on Childhood Lead Testing and Elevated Levels: Michigan 11.

Studies also confirm that throughout the exposure period the mean blood lead levels of Flint children remained low in comparison to historic trends and below the thresholds that have been reliably associated with adverse health effects. Ex. 5, Gomez, *Blood Lead Levels 2006-2016* at 160-161. In 2014 and 2015, the mean blood lead levels were lower than in any year in Flint’s history other than 2013. *Id.* at 162. Moreover, to the extent lead levels were elevated during the exposure period compared to 2013, the increase is as likely attributable to random variation as it is to the change in water source. *Id.* at 163; *see* Ex. 3, Finley Report 35-36, 42.

Moreover, researchers studying Flint have found that, to the extent there was an increase in 2014-2015, it was temporary and limited to certain at-risk children

with a history of lead exposure. They estimated that, in these at-risk populations, the mean increase in blood lead levels was approximately 0.50 µg/dL. *See* Ex. 8, Sammy Zahran, *Four Phases of the Flint Water Crisis*, 157 Envtl. Research 160, 162, 169 (2017) (Zahran, *Four Phases*) (estimating that the mean increase in blood lead levels among “at-risk” children was 0.50 µg/dL during first five months of the exposure period (April to September 2014) before falling significantly (beginning in September 2014)); Dep. 252:18-253:12. When all Flint children are considered, mean blood lead levels actually fell by approximately 0.15 µg/dL during the period when water from the Flint River was used (April 25, 2014, to October 15, 2015) compared to the 18-month period before the switch (April 25, 2012, to October 15, 2013). Ex. 6, Gomez, *Blood Lead Levels During 18-Month Switch* 792.

Dr. Hu, however, did not consider that data in assessing whether subclass members were injured. He did not attempt to estimate the blood lead levels of subclass members or the degree to which subclass members’ blood lead supposedly increased as a result of their exposure. Dep. 202:24-205:19. In fact, Dr. Hu admitted that he made no independent determination that any subclass members actually were exposed to lead in an amount that could cause harm. *Id.* at 151:18-152:11, 202:24-205:19.

Dr. Hu’s failure to account for the available blood lead level data renders his opinions regarding the subclass members’ exposures unreliable. *See Mohney v. USA*

*Hockey, Inc.*, 138 F. App'x 804, 809 (6th Cir. 2005) (excluding expert who relied on “estimates and assumptions” rather than “the actual data”); *Hendrian v. Safety-Kleen Sys., Inc.*, 2014 WL 12658969, at \*5 (E.D. Mich. Apr. 15, 2014) (holding that exposure assessment of plaintiff’s expert was inadmissible because it did not account for reliable data suggesting that toxin was present at lower levels than expert estimated).

**2. Dr. Weisel’s and Dr. Georgopoulos’s Opinions Do Not Show That All Subclass Members Suffered Material Incremental Exposure To Lead**

Instead of analyzing actual data about water lead levels and blood lead levels in Flint, Dr. Hu relied on the opinions of Dr. Weisel and Dr. Georgopoulos. VNA has moved to exclude the opinions of both experts because their opinions are unreliable. If their opinions are excluded, then Dr. Hu’s opinion should be excluded as well. *Hendrian*, 2014 WL 1464462, at \*6.

But even if Dr. Weisel’s and Dr. Georgopoulos’s opinions are admitted, they do not support Dr. Hu’s conclusion because they do not show that every subclass member was exposed to substantially elevated water lead levels or sustained a harmful incremental increase in blood lead levels as a result of the water crisis.

**a. Dr. Weisel's Opinions Do Not Show That All Subclass Members Were Exposed To Substantially Elevated Water Lead Levels**

Dr. Weisel asserts that three categories of buildings likely had increased water lead levels after the switch. He does not quantify those water lead levels, much less compare them to pre-switch levels. Thus, Dr. Hu cannot rely on those opinions to conclude that every subclass member was exposed to sufficient additional lead to cause injury.

Dr. Weisel states that children and pregnant women ingested increased concentrations of lead as a result of Flint's change in water source to the Flint River if they consumed unfiltered tap water over a period of at least 90 days between May 1, 2014, and January 5, 2016, and lived in a home built before 1986 or a home with a documented water lead level, or attended a school or daycare center with a documented water lead level. Weisel Report 7, 10-11, ECF No. 1208-136, PageID.37892, 37895-37896; *see Decl. ¶ 21(i)-(iii), PageID.35892-35893.*

But Dr. Weisel does not say that people who ingested water at those locations were exposed to materially higher lead levels as a result of the change in water sources. He says that the water lead levels "increased"—but he does not quantify those increases. The increases may have been too small to materially increase the risk presented by ingestion of the tap water. And it would be unreasonable to infer that every building within one of Dr. Weisel's categories experienced a significant

increase. Some buildings are included because, when tested, they had confirmed water lead levels. But that does not provide any comparison between pre-switch and post-switch water lead levels. Dr. Hu's criteria are satisfied even if the water lead levels are very low: He includes homes "having a water lead level exceeding the minimum reporting limit of the method used," Decl. ¶ 21(ii), PageID.35892, and schools and daycare centers with water lead levels that are either detectable or greater than 1 part per billion (or 0.1 µg/dL), *id.* ¶ 21(iii), PageID.35893.

As for homes built before 1986—which is 99% of the homes in Flint—Dr. Weisel simply assumes that all of them had lead in their plumbing (unless the plumbing was replaced), because federal law allowed that until 1986. Weisel Report 15, PageID.37900; *see* 42 U.S.C. § 300g-6(a)(1)(A). First, Dr. Weisel concedes that homes where the plumbing was replaced would need to be excluded, and to identify those homes would require an individualized inquiry. Second, Dr. Weisel assumes that, for the remaining homes, lead was released into tap water from their plumbing components. Weisel Report 15-16, PageID.3790037901. Dr. Weisel has no information about how much lead (if any) was contained in the interior plumbing of these thousands of homes.

Even if Dr. Weisel is correct that some incremental amount of lead was released from lead-infused interior plumbing after the water-source switch in April 2014, there is no basis to conclude that the release continued through February 2015

(when VNA arrived) or that it led to meaningful incremental increases in water lead levels in every home. As Dr. Finley explains, sampling data from 2015 show that between 18 and 26 percent of pre-1986 homes had non-detectable water lead levels. Ex. 3, Finley Report 40. Moreover, lead service lines are the most significant potential source of lead in tap water, *id.* at 24, and well over half of homes in Flint that participated in a program to replace lead service lines were found to have copper service lines, not lead service lines, *id.* at 25. Importantly, “the majority of samples collected from homes with copper service lines in August 2015 had non-detectable [water lead levels].” *Id.* at 29.

Accordingly, Dr. Weisel has failed to show that all pre-1986 homes in Flint experienced a material increase in water lead levels—even if they did have lead in their interior plumbing. Thus, Dr. Hu cannot rely on Dr. Weisel’s opinions to conclude that every person in the subclass was exposed to increased water lead levels, much less that they experienced material increases in blood lead levels.

**B. Dr. Georgopoulos’s Opinion Does Not Show That All Subclass Members Experienced Substantially Elevated Blood Lead Levels**

Dr. Georgopoulos uses modeling to estimate the range of blood lead levels resulting from various exposure assumptions. But his modeling does not show that all subclass members experienced sufficient increases in their blood lead levels to cause harm.

Dr. Georgopoulos said that people who satisfied the class definition “would have had increased blood lead levels because of the change in water source on April 25, 2014.” Georgopoulos Decl. ¶ 11(a), ECF No. 1208-137, PageID.37956. But he estimated blood lead levels only using “example applications” for “hypothetical” subjects. *Id.* ¶ 15(a)-(b), PageID.37961. He did not look at the blood lead levels for a single actual person in Flint. And his analysis confirms that actual blood lead levels would vary according to the individual circumstances of each subclass member, because he included those individual variables as inputs in his analysis to estimate the results for his hypothetical subjects. Ex. 9, Georgopoulos Dep. 57:8-20.

In fact, Dr. Hu conceded that individual class members’ exposures would vary widely depending on their particular circumstances, including the age and condition of their homes, the neighborhoods in which they lived, their diets, and various genetic factors. Dep. 174:1-187:18, 213:22-216:1 As Dr. Finley explains, lead absorption is affected by multiple factors that vary across individuals, such as nutritional iron status and genetic factors. Ex. 3, Finley Report 20-23. Dr. Hu offered no basis to disregard the *actual* facts about class members’ exposures, and the need to consider those individualized factors precludes class certification.

Dr. Hu defends his approach by stating that the criteria for inclusion in the subclass (specifically, exposure over 90 days) ensures that the subclass excludes

individuals with “trivial, fleeting, or unlikely lead exposure.” Decl. ¶ 13, PageID.35889. But Dr. Georgopoulos explained that he included the criteria on duration of exposure for practical (not scientific) reasons, namely, to facilitate his use of the IEUBK model to estimate the blood lead levels that would result from hypothetical exposure scenarios. Georgopoulos Decl. ¶ 15, PageID.37960 (“The scientific basis for the 90 day requirement is related to the need of establishment of a quasi-steady state for Blood Lead Levels (BLLs) as a result of exposure, a criterion that . . . allows the reliable application of the [IEUBK] model.”). The 90-day requirement was not intended to ensure that a certain minimum exposure threshold was exceeded, but only to facilitate the use of the IEUBK model.<sup>3</sup>

In fact, Dr. Hu conceded that his exposure assessments were based on administrative and practical necessity rather than any accepted scientific methodology. As he explained at his deposition, his assessment of what qualifies as “trivial” exposure is not based on science, but boils down to “an administrative decision” that reflects his attempt “to provide a practical response” to Plaintiffs’ counsel’s request that he help them define a class. Dep. 288:12-289:12. Administrative, rather than scientific, criteria were necessary because, according to

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<sup>3</sup> Further, Dr. Georgopoulos assumed exposure for all 90 days for purposes of his modeling, rather than 14 days of exposure over a 90-day period (the subclass criteria). This shows that Plaintiffs defined their class to be as large as possible rather than to target any particular increase in blood lead levels.

Dr. Hu, “[t]here simply are no data that would allow us to identify [class members] using blood lead levels.” *Id.* at 289:4-12. Dr. Hu said that he and his fellow experts “constructed the best scientific approach [they] could,” but ultimately had to rely on common-sense or administrative benchmarks. *Id.* at 286:13-287:4, 289:11-12.

This is the “antithesis of the scientific method.” *Claar v. Burlington N. R.R.*, 29 F.3d 499, 502-03 (9th Cir. 1999). A lack of sufficient facts or data is no reason to abandon the scientific method in favor of gap-filling “administrative” or “practical” standards to satisfy a plaintiff’s litigation needs. “Expert reports must include ‘how’ and ‘why’ the expert reached a particular result, not merely the expert’s conclusory opinions.” *R.C. Olmstead, Inc. v. CU Interface, LLC*, 606 F.3d 262, 271 (6th Cir. 2010). Because Dr. Hu’s opinions are based on unreliable exposure assessments manufactured for purposes of litigation, they are inherently unreliable and must be excluded. *Pluck*, 640 F.3d at 679-80; *Nelson*, 243 F.3d at 252; *Hendrian*, 2014 WL 1464462, at \*6.

## **II. Dr. Hu’s Opinions Defining The Subclass Members’ Alleged Injury Are Unreliable And Unhelpful**

### **A. Dr. Hu’s Opinion Regarding The Nature Of The Subclass Members’ Injury Has No Basis In A Reliable Methodology**

Dr. Hu’s opinion that all subclass members suffer from a “non-negligible impairment of . . . neurobehavioral development,” Decl. ¶ 22, PageID.35895, also lacks any basis in a reliable methodology. He does not define that injury or describe

its symptoms or effects. He does not cite any publications describing the injury or say that it is recognized by professionals in his field. And he does not explain how that injury may be diagnosed or ruled out.

Dr. Hu admitted that the impairment he assigns to the entire subclass is not an actual medical condition and that it was not developed based on scientific criteria. Rather, he said that “non-negligible impairment of [] neurobehavioral development” is a “qualitative thing.” Dep. 273:12-275:18. It merely reflects Dr. Hu’s opinion regarding “what can be administratively established.” *Id.* As Dr. Hu conceded, “the reality is, in this particular situation, decisions have to be made how to establish this class.” *Id.* at 274:2-9. This is nothing more than a litigation-driven definition of injury.

Dr. Hu admits that his newly created “injury” is not a clinical diagnosable condition. He admits that, to attribute a “neurobehavioral disorder” to excess lead from Flint’s water, there would need to be “clear evidence of having developed an attention-related behavioral diagnosis . . . as well as an individual assessment of the plaintiff to conduct a process of differential etiology.” Decl. ¶ 34, PageID.35915-35916. Thus, to show a clinical or diagnosable condition such as ADHD, Dr. Hu concedes that for each individual it would be necessary to have evidence of substantial exposure plus a medical examination of the individual to diagnose the condition and consider other possible causes of it. *Id.*

To show injury, Dr. Hu merely presumes that everyone who is exposed to lead loses IQ points. Dep. 194:9-13, 263:10-265:11, 415:7-417:13. Dr. Hu models various exposure scenarios and says that under those scenarios, children would experience loss of IQ points in various ranges, beginning as low as three-tenths of one IQ point. Decl. ¶ 22, PageID.35895-35901. But Dr. Hu's opinion that subclass members lost IQ points is purely speculative. As VNA's expert psychologist, Dr. Robert McCaffrey, and expert neuropsychologist, Dr. John Gaitanis, explain in their expert reports, it is inappropriate to diagnose neurological or cognitive impairments, much less the cause of such impairments, without individualized assessments. Ex. 12, McCaffrey Report 3-5; Ex. 13, Gaitanis Report 1-2. Other courts that have considered similar "low-level" lead-exposure claims have held that, for an expert's opinion regarding a loss of IQ points to rise above a speculative level, there must be IQ testing both before and after the exposure. *Palmer v. Asarco Inc.*, 510 F. Supp. 2d 519, 525 (N.D. Okla. 2007) ("[W]ithout preexposure testing, any opinion that plaintiffs have lost IQ points is purely speculative."). Here, Dr. Hu concedes that he does not know anything about the subclass members' pre-exposure or post-exposure IQ scores, and to know that would require an individualized analysis. Dep. 200:4-24, 282:10-283:23.

There is no way to confirm Dr. Hu's contentions about class members' IQs—a strong indicator that his opinion is unreliable. See *Nelson*, 243 F.3d at 251 n.5 (in

assessing reliability, courts consider “whether a theory or technique can be or has been tested”). One either believes him, or not. Nor are there any standards to assess whether the injury exists at all. Dep. 271:16-273:11, 274:16-275:18. Dr. Hu’s definition of injury, which he crafted with the express goal of trying to create a class, does not satisfy Rule 702’s most basic requirement that the testimony qualify as “scientific knowledge,” not “subjective belief or unsupported speculation.” *Daubert*, 509 U.S. at 590.

**B. The Injury Dr. Hu Describes Is Not Legally Cognizable, And Therefore Dr. Hu’s Opinions Regarding That Ostensible Injury Would Not Be Helpful**

Even if Dr. Hu’s subjective definition of “non-negligible impairments” met the standard for expert testimony under Rule 702, his opinion that class members suffered this injury should be excluded because it does not “logically advance a material aspect of the proposing party’s case.” *United States v. Lavictor*, 848 F.3d 428, 442 (6th Cir. 2016).

Under Michigan law, to recover under a negligence theory, the plaintiff must “demonstrate a present physical injury to person or property in addition to economic losses that result from that injury in order to recover.” *Henry v. Dow Chem. Co.*, 701 N.W.2d 684, 690 (Mich. 2005); *see Means v. U.S. Conference of Catholic Bishops*, 836 F.3d 643, 653-54 (6th Cir. 2016) (holding that Michigan law requires plaintiffs to prove “present physical injury” to state a claim for negligence).

The “non-negligible impairments” described by Dr. Hu do not satisfy this requirement because some of them are so small that they could not be measured and would have no effect. Dr. Hu states that subclass members lost 0.50 IQ points for every 1  $\mu\text{g}/\text{dL}$  increase in their blood lead levels. Because Dr. Hu does not identify a threshold blood lead level or a specific magnitude of increase in blood lead levels necessary to become a subclass member, the subclass would include children who had less than a 1  $\mu\text{g}/\text{dL}$  increase in blood lead levels and would have lost, at most, a fraction of an IQ point.<sup>4</sup> Dr. Hu concedes that it is impossible to observe or measure such small changes in IQ. Dep. 343:19-344:22, 389:12-391:4.

Thus, Dr. Hu can opine only that each subclass member suffered, at most, subclinical, non-diagnosable, unobservable, and immeasurable harms. That is insufficient to satisfy Michigan’s “present physical injury” requirement. *In re Meridia Prods. Liab. Litig.*, 328 F. Supp. 2d 791 (N.D. Ohio July 4, 2004) (“An increase in blood pressure, in and of itself, is not a compensable injury because it does not create a loss or detriment.”), *aff’d*, 447 F.3d 861 (6th Cir. 2006); *Ranier v.*

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<sup>4</sup> Although different studies have arrived at different estimates of how much blood lead levels increased during the water crisis, no studies have concluded that the average increase in children’s blood lead levels was anywhere near 1  $\mu\text{g}/\text{dL}$ . The highest estimates calculate an increase in blood lead levels of approximately 0.50  $\mu\text{g}/\text{dL}$ . See Zahran, *Four Phases* at 162 (estimating that the mean increase in blood lead levels was 0.50  $\mu\text{g}/\text{dL}$  during the first four months of the exposure period before returning to pre-crisis levels). That would equate to an IQ decrement of merely 0.25 IQ point using Dr. Hu’s methodology.

*Union Carbide Corp.*, 402 F.3d 608, 614 (6th Cir. 2005) (subcellular damage was not “bodily injury” as required under Kentucky law).

### **III. Dr. Hu’s Opinions Do Not Fit Plaintiffs’ Theory Of Liability With Respect To VNA**

Dr. Hu’s opinions that members of the minors subclass suffered increased exposure to lead and were injured as result also should be excluded on the ground that it does not fit Plaintiffs’ theory of liability with respect to VNA.

For expert testimony to meet the relevance requirement of Rule 702, there must be “a ‘fit’ between the testimony and the issue to be resolved by the trial.” *United States v. Bonds*, 12 F.3d 540, 555 (6th Cir. 1993). As the Sixth Circuit has explained, that requires “a connection between the scientific research or test result being offered and the disputed factual issues in the case in which the expert will testify.” *Pride v. BIC Corp.*, 218 F.3d 566, 578 (6th Cir. 2000) (citing *Daubert*, 509 U.S. at 592). The Supreme Court has recognized that as well, holding in *Comcast Corp. v. Behrend*, 569 U.S. 27 (2013), that an expert’s opinion that was broader than the plaintiffs’ theory of liability could not be used to support class certification. *Id.* at 31-32 (expert testimony about antitrust impact could not be used to satisfy the predominance requirement of Rule 23(b)(3) because it was not limited to the liability theory permitted by court).

Dr. Hu’s opinion lacks the necessary fit to Plaintiffs’ theory of liability against VNA. He opines that members of the minors subclass were injured as a result of

their exposure to lead in Flint’s drinking water during a period of at least 14 out of 90 days during the 18-month exposure period. Decl. ¶ 22, PageID.35895. That period ran from April 2014 until October 2015. However, Flint did not engage VNA until February 2015. Therefore, by the time VNA began its work in Flint, many members of the minors subclass may have stopped drinking Flint water altogether. Those subclass members would have no claim for personal injury against VNA.

Moreover, there is uncontroverted evidence from scientists not associated with plaintiffs or defendants that water lead levels in Flint fell and returned to pre-switch levels significantly before VNA began its work. Ex. 10, Siddhartha Roy, et al., *Lead release to potable water during the Flint, Michigan water crisis as revealed by routine biosolids monitoring data*, 160 Water Research 475 (2019); Ex. 16, Siddhartha Roy and Marc Edwards, *Efficacy of corrosion control and pipe replacement in reducing citywide lead exposure during the Flint, MI water system recovery*, 6 Environ. Sci. Water Res. Technol. 3024, 3026 Fig.1 (2020); Ex. 3, Finley Report 27-29 (discussing Roy and Edwards water lead level research and timing of return to “baseline” levels). Dr. Hu and Plaintiffs’ other experts ignore that evidence. Dep. 284:4-285:13.

Further, Dr. Hu’s methodology does not allow one to determine whether a class member was exposed to excess lead after VNA’s arrival. Because Dr. Hu does not opine that all members of the minors subclass suffered measurable harm due to

exposure to increased lead in drinking water that occurred after February 2015, when VNA was engaged, his opinions do not fit Plaintiffs' claims. Those opinions therefore cannot be used to support certification of a class against VNA and thus should be excluded under Rule 702(a) and 402.

## CONCLUSION

The Court should exclude the opinions discussed above.

Respectfully submitted,

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Dated: January 7, 2021

**CERTIFICATE OF SERVICE**

I hereby certify that on January 7, 2021, I electronically filed the foregoing document with the Clerk of the Court using the ECF System, which will send notification to the ECF counsel of record.

Respectfully submitted,

/s/ James M. Campbell

Dated: January 7, 2021